The inside branchlets get gradually weaker, until spur after spur in successive years loses the power of forming verticillate leaves, *produces male flowers, the last effort of life*, and then expires. Clear as I think the illustrations in my previous paper were to show that the production of male and female flowers in Coniferæ was a mere question of a relative flow of vital force, nothing can better illustrate it than this one of the Larch.

I now come to the chief point of the present paper—the influence of these laws of vigor in the modification of the parts of fructification. You will see in some of these weaker shoots, which in the production of male flowers most of the spurs have performed the last sad offices of life, a few have had just enough extra vigor vouchsafed to them to produce female cones, and that it is just *these weak cones which produce the lengthened bracts*. I have compared with those of *Larix Griffithii*.

I have said in my paper on "Taxodium and Penus," in reply to an objection that my point as regards *Glyptostrobus sinensis* and *Taxodium distichum* being the same thing, is probably wrong, because the parts of fructification differ in each,—that as these parts of fructification are but modified leaves, the same law of change ought to operate on them as well. This instance of *Larix* proves it to be so. The bracts in Coniferæ are modified leaves, and the carpellary scales modifications of the woody axis. According to our now fully demonstrated theory, the leaves of Coniferæ are free, and become fully developed just in proportion to the weakness of the woody or axillary parts. This law might be expected to show itself in force in the bracts of the cone, as it is seen it really does in the specimens before us.

I am often asked what influence this law of vigor, as modifying form, is to have on our ideas of specific character? To me it seems the tendency will be to make our recognition of distinct things clearer, rather than to confuse them. As it is now, science on its present basis contradicts our senses. Every one knows a larch, a spruce, a fir, or a cedar, almost instinctively at sight; but no sooner were the rules of our best botanists applied to them, than no one knows which is which, and they are all thrown together in one genus. By pointing out the *directions of change* on one unvarying law, applicable equally to a whole genus or natural order, certainly affinities must be brought clearer and closer together, than by the present system of conjoining a few special points, many of which have no physiological relation to one another.

September 7th.

DR. RUSCHENBERGER, Vice-President, in the Chair.

Twenty-one members present.

Thomas Meehan said it was well known that all vegetable physiologists taught there were two classes of buds in plants, one called *adventitious* buds which had a kind of nomadic existence, springing anywhere from root or branch in apparent defiance of law or order,—the other *axillary* buds which were supposed to owe their origin to the leaf from the base of which they spring. It was customary to speak of these as the "parent leaves of the axillary buds." He would show that the leaf not only did not aid the axillary bud formation, but was rather a foe to bud development. He exhibited vigorous shoots of the Kentucky Coffee Tree, Honey Locust, Virginia Itea, Hickories and Walnuts, showing what had either been entirely overlooked by other botanists or passed over as of no importance, that there were in these two or three buds instead of the usual single axillary bud, one above another in a direct line, and that in all these instances the one the farthest removed from the base of the leaf, and of course the one the least under its influence, was the largest and best developed. These facts he had already incorporated in a paper read before the American Association at Salem last month. He

had since extended the observations so as to get proofs of the same principle from single bud cases. He exhibited specimens of some maple shoots of the present season's growth and showed that there was a gradual diminution of strength in the leaves from the early spring to the present time; *but just in proportion as the leaf lost in vigor the axillary buds gained in strength.* The upper buds were large and plump, the lower scarcely discernible. The inference was made clear, from these illustrations, that whatever may be the cause of the simultaneous appearance of leaves and axillary buds, they were not in harmony together.

He further suggested how very important it was that botanists should note well the most trivial phenomenon. These facts, which bid fair to revolutionize one of the most popular dogmas in vegetable physiology, had all originated from the single observation that the glands on the leaf stalks of the common wild senna weed, *Cassia marilandica*, were not always in one fixed position, and could not, therefore, be an elementary part of the regular leaf system. They were afterwards found to be buds which had been devoured, as it were, by the leaf, and actually absorbed into its structure.

Mr. Redfield noticed the finding of Aspidium aculeatum in the Catskill Mountains, two degrees farther south than it had heretofore been observed.

September 14th.

DR. LECONTE in the Chair.

Nine members present.

September 21st.

DR. RUSCHENBERGER, Vice-President, in the Chair.

Sixteen members present.

September 28th.

DR. BRIDGES in the Chair.

Twenty members present.

The following gentlemen were elected Members:

Jas. Cummisky, M. D.; T. H. Struts; Nathaniel E. Macomber; Wm. H. Fynn.

Prof. Geo. H. Cook, of Princeton, N. J., was elected a Correspondent.

Oct. 5th.

DR. RUSCHENBERGER, Vice-President, in the Chair.

Eighteen members present.

The following papers were presented for publication:

"Meteors, their composition and the cause of their ignition and of their white trails." By Jacob Ennis.

"On the variations of the Genus Ægiothus." By Elliott Coues, A. M.